

ABSTRACT

Provided is a GaN-based semiconductor light emitting device formed on a GaN single-crystal substrate and having a configuration capable of reducing a current leak.

A GaN-based semiconductor laser device (50) is disclosed as an example of the GaN-based semiconductor light emitting device, and it is a semiconductor laser device having a structure such that a p-side electrode and an n-side electrode are provided on a multilayer structure of GaN-based compound semiconductor layers. The GaN-based semiconductor laser device (50) is similar in configuration to a conventional GaN-based semiconductor laser device formed on a sapphire substrate except that a GaN single-crystal substrate (52) is used in place of the sapphire substrate and that the multilayer structure is directly formed on the GaN single-crystal substrate (52) without providing a GaN-ELO structure layer. The GaN single-crystal substrate (52) has continuous belt-shaped core portions (52a) each having a width of 10 μm . These core portions (52a) are spaced apart from each other by a distance of about 400 μm . A laser stripe (30), a pad metal (37) for the p-side electrode (36), and the n-side electrode (38) are provided on the multilayer structure

in a region except the core portions (52a) of the GaN single-crystal substrate (52). The horizontal distance S_p between the pad metal (37) and the core portion (52a) adjacent thereto is $95\text{ }\mu\text{m}$, and the horizontal distance S_n between the n-side electrode (38) and the core portion (52a) adjacent thereto is also $95\text{ }\mu\text{m}$.